Mark Steven Cembrowski
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Assistant Professor • Dept. of Cellular and Physiological Sciences • University of British Columbia
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Education

Ph.D. in Applied Mathematics, Northwestern University, 2011
M.S. in Applied Mathematics, Northwestern University, 2008
B.Sc. in Mathematics, University of British Columbia, 2007

University of British Columbia affiliations

Associate Professor (starting July 2024) / **Assistant Professor** (January 2019-July 2024)**,**
Department of Cellular and Physiological Sciences, Faculty of Medicine
Investigator, Djavad Mowafaghian Centre for Brain Health (2019-current)
Associate Faculty, School for Biomedical Engineering (2020-current)
Associate Faculty, Department of Mathematics (2020-current)

Other current affiliations

Scholar, Michael Smith Foundation for Health Research (2020-current)

Previous employment

Research scientist (2015-2018) and **postdoctoral associate** (2012-2015)
Janelia Research Campus, HHMI. Laboratory Head: Nelson Spruston

Selected awards and distinctions

- **Distinguished Achievement Award for Foundational Science Research.** UBC Faculty of Medicine. 2021.
- **Krieg Cortical Explorer Prize.** Cajal Club. 2020. (sole recipient in 2020 worldwide competition)
- **Scholar Award.** Michael Smith Foundation for Health Research. 2020.
- **1907 Trailblazer Competition Institutional Nominee**. 2020. (1 of 2 selected at UBC)
- **Azrieli Future Leader of Canada Brain Research.** Brain Canada Foundation. 2019.
- **Visiting Scientist.** Janelia Research Campus, Howard Hughes Medical Institute. 2019-2023.
- **Next Generation Leader.** Allen Institute, 2018. (1 of 6 selected in 2018 worldwide competition; award led to appointment to the Allen Institute Scientific Advisory Board, 2018-2021)

Publications (*: co-first, #: corresponding, ^: mentee)

25. Kapustina, M. ^*, Zhang, A.A. ^, Tsai, J.Y.J.#, Bristow, B.N.*, Kraus, L.*, Sullivan, K.E.*, Erwin, S.R.*, Wang, L., Stach, T.R., Lemire, A.L., **Cembrowski, M.S.#.** The cell-type-specific spatial organization of the anterior thalamic nuclei of the mouse brain. Cell Reports, 7;43: 2024.
24. Guskjolen, A.^#, **Cembrowski, M.S.#.** Engram neurons: Encoding, consolidation, retrieval, and forgetting of memory. Molecular Psychiatry, 28:3207–3219, 2023.
23. Sullivan, K.E.*, Kraus, L.*, Kapustina, M.#, Wang, L., Stach, T., Lemire, A.L., Clements, J., **Cembrowski, M.S.**§ Sharp cell-type-identity changes differentiate the retrosplenial cortex from the neocortex. Cell Reports, 6;42(3): 2023.
22. O'Leary, T.P.*^, Kendrick, R.M.*^, Sullivan, K.E. ^, Bristow, B.N. ^, Wang, L., Clements, J., Lemire, A.L., **Cembrowski, M.S.#.** Neuronal cell types, projections, and spatial organization of the central amygdala. iScience, 25(12): 1-18, 2022.

21. Erwin, S.R.^*, Bristow, B.N.^*, Sullivan, K.E.^, Kendrick, R.M.^, Marriott, B., Wang, L., Clements, J., Lemire, A., Jackson, J., **Cembrowski, M.S.#.** Spatially patterned excitatory neuron subtypes and circuits of the claustrum. eLife, 10:e68967, 2021.
20. Sullivan, K.E.*^, Kendrick, R.M.*^, **Cembrowski, M.S.#**. Elucidating memory in the brain via single-cell transcriptomics. Journal of Neurochemistry, 157:982–992, 2021.
19. O'Leary, T.P.^*, Sullivan, K.E.^*, Wang, L., Lemire, A., Clements, J., **Cembrowski, M.S.#**. Extensive and spatially variable within-cell-type heterogeneity across the basolateral amygdala. eLife 9, e59003:1-27, 2020.
18. Erwin, S.R.^*, Sun, W.*, Copeland, M., Lindo, S., Spruston, N., **Cembrowski, M.S. #.** A sparse, spatially biased subtype of mature granule cell dominates activity in hippocampal-associated behaviors. Cell Reports 31(4): 1-12, 2020.
17. **Cembrowski, M.S.#** Single-cell transcriptomics as a framework and roadmap for understanding the brain. Journal of Neuroscience Methods, 326: 1-7, 2019.
16. **Cembrowski, M.S.#,** Spruston, N.# Heterogeneity within classical cell types is the rule: lessons from hippocampal pyramidal neurons. Nature Reviews Neuroscience, 20(4): 193-204, 2019.
15. **Cembrowski, M.S.#,** Wang, L., Lemire, A., DiLisio, S.F.^, Copeland, M., Clements, J., Spruston, N. The subiculum is a patchwork of discrete subregions. eLife 7, 10/7554/eLife.37701, 2018.
14. **Cembrowski M.S.#,** Menon, V.# Continuous variation within cell types of the nervous system. Trends in Neurosciences 41(6): 339-350, 2018 (invited submission).
13. **Cembrowski, M.S.#,** Phillips, M.G.^, DiLisio, S.F.^, Shields, B.C., Winnubst, J., Chandrashekar, J., Bas, E., Spruston, N.# Dissociable structural and functional hippocampal outputs via distinct subiculum cell classes. Cell 173(5): 1280–1292, 2018.
12. Bloss, E.B., **Cembrowski, M.S.**, Karsh, B., Colonell, J., Fetter, R.D., Spruston, N.# Single excitatory axons form clustered synapses onto CA1 pyramidal cell dendrites. Nature Neuroscience 21(3): 353-363, 2018.
11. **Cembrowski, M.S.#**, Spruston, N. Integrating results across methodologies is essential for producing robust neuronal taxonomies. Neuron 94(1): 747-751, 2017.
10. **Cembrowski, M.S.#**, Spruston, N. Illuminating the neuronal architecture underlying context in fear memory. Cell 167(4): 888-889, 2016 (invited submission).
9. **Cembrowski, M.S.**, Wang., L., Sugino, K., Shields, B.C., Spruston, N.# Hipposeq: a comprehensive RNA-seq database of gene expression in hippocampal principal neurons. eLife 5, 10.7554/eLife.14997, 2016.
8. Bloss, E.B., **Cembrowski, M.S.**, Karsh, B., Colonell, J., Fetter, R., Spruston, N.# Structured patterns of dendritic inhibition support branch-specific forms of integration in CA1 pyramidal cells. Neuron 89(5): 1016-1030, 2016.
7. **Cembrowski, M.S.**, Bachman, J.L., Wang, L., Sugino, K., Shields, B.C., Spruston, N.# Spatial gene-expression gradients underlie prominent heterogeneity of CA1 pyramidal neurons. Neuron 89(2): 351-368, 2016.
6. Kim, Y.*, Hsu, C.-L.*, **Cembrowski, M.S.,** Mensh, B.D., Spruston, N.# Dendritic sodium spikes are required for long-term potentiation at distal synapses on hippocampal pyramidal neurons. eLife 4, doi:10.7554/eLife.06414, 2015.
5. Choi, H., Lei, Zhang, L., **Cembrowski, M.S.**, Sabottke, C.F., Markowitz, A.L., Butts, D.A., Kath, W.L., Singer, J.H., Riecke, H.# Intrinsic bursting of AII amacrine cells underlies oscillations in the rd1 mouse retina. Journal of Neurophysiology 112(6): 1491-1504, 2014.

4. Ke, J., Wang, Y., Borghuis, B.G., **Cembrowski, M.S.**, Riecke, H., Kath, W.L., Demb, J.B., Singer, J.H.[#] Adaptation to background light enables contrast coding at rod bipolar cell synapses. Neuron 81(2): 388-401, 2014**.**
3. **Cembrowski, M.S.[#]**, Logan, S., Tian, M., Jia, L., Li, W., Kath, W.L., Riecke, H., Singer, J.H. The mechanisms of repetitive spike generation in an axonless retinal interneuron. Cell Reports 1(2): 155-166, 2012.
2. Jarsky, T.*, **Cembrowski, M.S.*,** Logan, S., Kath, W.L., Riecke, H., Demb, J., Singer, J.H.[#] A synaptic mechanism for retinal adaptation to luminance and contrast. The Journal of Neuroscience 31(30): 11003-110515, 2011.
1. Lim, E.M., Cembrowski, G.S., **Cembrowski, M.,** Clarke, G.[#] Race-specific WBC and neutrophil count reference intervals. International Journal of Laboratory Hematology 32(6): 590-597, 2010.

Summary of invited talks as PI: 41 total invited talks: 14 international, 15 national, 12 local talks. *Includes 4 keynote speakerships, 1 distinguished speakership, and 1 plenary talk.*

Summary of training as PI: 40 total trainees: 3 postdocs, 15 graduate students, 3 technicians, 22 undergraduates. *In ~5.5 years as a PI, my trainees have received >$2M in competitive scholarship/fellowship offers.*

Summary of funding as PI: Funding sources include: CIHR, HHMI, USA Department of Defense, NSERC, NFRF, DMCBH, Brain Canada, Health Canada, MSFHR, CFI, Scottish Rite Charitable Foundation, Azrieli Foundation, Alzheimer's Society of Canada. *In ~5.5 years as a PI, my lab has received >$5M in external operating/salary funding as PI/Co-PI, and >$10M in infrastructure as Co-PI.*